Checklist for Fuel Dispensing Facilities Switching to Ethanol-Blended Gasoline

DISCLAIMER:

This checklist identifies a list of issues that facilities with fuel dispensing operations should consider when switching to ethanol-blended gasoline. The information in this list was developed with the input of industry experts. Although this list is intended to identify some of the important issues to be considered when making the switch to ethanol-blended gasoline, the list should not be considered exhaustive and may not be applicable in all circumstances. Any reference to legislative or regulatory requirements given in this checklist is for convenience only. A copy of the relevant legislation and regulations should be obtained to determine exact requirements. The Ministry of the Environment (MOE) assumes no responsibility for errors or omissions in any of the information contained in this checklist and MOE specifically disclaims any express or implied warranties related to the use of this checklist. The checklist is not, and should not be used as, legal or technical advice. Facilities should consult their appropriate legal or technical professional if they require specific advice. This checklist may be amended from time to time.

Part A - Investigative / Preparatory Phase

☐ Verify tank material and dispensing equipment compatibility - Some underground storage tanks, tank liners, and above-ground equipment such as nozzles, hoses and meter seals may not be compatible with ethanol-gasoline blends. If any doubt exists as to the compatibility of the tank(s) and/or dispensing equipment, the manufacturer or equipment supplier should be consulted.

☐ Investigate tank and water problems and correct - Underground storage tanks frequently have small amounts of water at the bottom of the tanks, referred to as “water bottoms”. Ethanol-blended gasoline should not be stored in tanks which contain water. Excessive water levels can cause the ethanol in an ethanol - gasoline blend to “phase separate”, resulting in a layer of water and ethanol on the bottom of the tank. Therefore, it is imperative that water be eliminated from the system.

The tank owner or operator should review the maintenance history of all tanks to be used for storage of ethanol-gasoline blends. Any tank with a history of excessive water problems should be reviewed closely. The source of water entering the tank must be identified and eliminated if the tank is to be converted for use with ethanol-gasoline blends. If historic data are not available, it is recommended that historic data be developed and reviewed prior to conversion.

Also check to see if tanks have excessive tilt. Sticking opposite ends of the tank can usually do this. If one end of the tank is lower, it will result in a higher stick reading than the other end. When one end of the tank is lower, water can collect at the low end and go undetected. In such cases, the low end of the tank should be tested for water prior to the first delivery as well as on an on-going basis.

Note: The dipstick must be kept in a dry place to prevent incorrect readings.

☐ Submersible or Suction Stubs Check - In order to minimize risk of carryover of water or particulates from the bottom of the tank, it is recommended that the submersible or suction stubs be positioned between 15 cm (6”) to 20 cm (8”) off the bottom of each tank. Lower submersibles or suction stubs should be raised.

Part B - Conversion Phase (before first delivery)

- ☐ Check to see that the tanks are clean - Unlike gasoline, ethanol can loosen the heavier gasoline components (sludge) that can accumulate over time in gasoline storage tanks. If left unchecked, these deposits can accumulate in fuel and/or dispenser filters. To ensure fuel quality and avoid engine performance problems associated with clogged fuel filters, storage tanks should be thoroughly cleaned prior to first delivery of ethanol-blended gasoline. Heavily contaminated tanks may have to be cleaned by hand or water washing.

- ☐ Equip pump or dispenser with 10-micron filter – To ensure fuel quality dispensers should be equipped with a 10-micron filter to catch any loosened deposits that may not have been removed during tank cleaning. Water absorbing filters are not recommended with ethanol blends.

- ☐ Fill line caps should be checked for proper fit and seal - Any improper fit or seal should be repaired. Manhole covers should be checked for proper water run-off and modified if necessary.

- ☐ Obtain ethanol compatible water detection paste - Obtain an oxygenated gasoline (e.g., ethanol) compatible water detecting paste prior to receiving the first load of ethanol-gasoline blend and check for water bottoms. If high water bottoms are present, they should be pumped off and disposed of in accordance with federal and provincial laws. Recheck for water bottoms and remove if necessary.

Part C – Delivery Phase (first delivery of ethanol-blended gasoline)

- ☐ Ensure product running through dispenser is clear and bright - After the initial delivery is dropped, it is recommended that a few litres of product be run through each dispenser to ensure that it is clear and bright. Ethanol blends have a solvency effect and may loosen sediment and sludge in tanks and fill lines. Once dispensed product is clear and bright, the tank can be placed back in service.

- ☐ The initial load should fill tanks to at least 80 % of capacity - This will allow the solvent effect of the ethanol to loosen

any sediment or varnish type deposits from the sides and upper portions of the tank.

Part D – Maintenance Phase

- ☐ Check for water bottoms daily using an ethanol-compatible water detection paste - If proper steps are taken to eliminate water from the storage system, phase separation should not be expected. However, if excess water is introduced into the storage tank (e.g., from leaving a fill cap off), then "phase separation" can occur, in which case:
    - o All dispensers supplied from that tank must be deactivated immediately; and
    - o Since the bottom layer contains ethanol and hydrocarbons, provincial regulations require that they be treated as a hazardous waste. Their handling and disposal is therefore subject to some very specific requirements.

- ☐ Replace filters if pump/dispenser is running slowly - Since ethanol can loosen varnish-like deposits in the tank, operators may need to change pump filters frequently during the first week of ethanol use.